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Do female managers help to lower within-firm gender pay gap? Public institutions vs private enterprises

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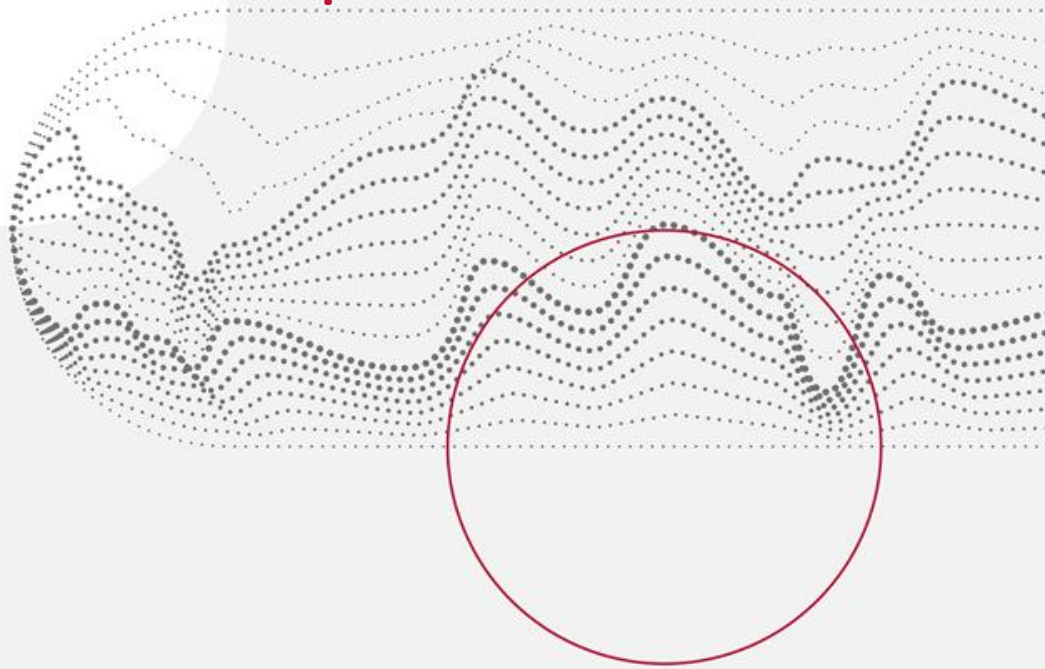

RESEARCH FOCUS AND RESEARCH QUESTIONS

The goal of the paper:

- to examine the link between the presence of women in the workforce and at the top level management and the gender wage inequality

The main research questions:

- How does the presence of female employees and female managers affect within-firm gender wage inequality?
- Does the role of women and female managers differ for the private firms and the public institutions?

RESEARCH RELEVANCE AND MOTIVATION

- The issue of the gender wage gap continues to attract attention, both by researchers trying to fully understand its roots and development, and by policymakers.

- Policy options to decrease women's disadvantage in pay include regulations aimed at increasing the share of female managers, and especially female board members.

- The existing evidence on the link between female managers and the gender pay gap is, however, still scarce. It also usually refers to private sector firms in Western Europe or the US (e.g. Bayard et al. (2003) for the US, Bertrand et al. (2014) for Norway, Flabbi et al. (2014) for Italy, Gagliarducci and Paserman (2014) for Germany)

RESEARCH CONTRIBUTION

We contribute to the existing literature in three main aspects:

- We analyze **firm level gender wage inequality** linking it to workers' sex composition and female managers
- We distinguish between **private and public** institutions
- We analyze these issues for **Poland,** which is interesting from at least three reasons:
  - The share of public sector employment is still large (app. 30%)
  - It displays a negative public sector wage premium, which is greater for women than for men.
  - It experiences a large discrepancy between the raw gender pay gap (around 6-9%) and the adjusted pay gap (around 20%)

DATASET AND VARIABLES

DATASET

2012 Structure of Wages and Salaries Survey – a large **matched employer-employee** database collected by the Polish Central Statistical Office.

- We limit the sample to firms with at least 100 employees
- The sample covers 194,397 (43%) individuals working in 1,652 public sector institutions and 255,839 (57%) individuals employed in 2,256 private companies

KEY VARIABLES

- Hourly wage – defined as the sum of monthly salary, 1/12 of yearly honorarium and extra remuneration paid for the public sector divided by the number of usual hours of work (per month) plus monthly salary received from overtime divided by monthly number of hours worked as overtime.
- Share of female managers – % of females among individuals working in occupations with ISCO code 1 (‘Managers’)

METHODOLOGY

The analysis is divided into two main steps:

- The derivation of firm level gender wage gap (for each firm)

  → Ñopo non-parametric decomposition method (Ñopo, 2008)

- The analysis of the relation between the unexplained portion of the firm level gender wage gap (‚discriminatory component') and workers' sex composition

  → Regression analysis, in which the dependent variable is the unexplained component of the gender wage gap derived from the first step, and the key independent variables are the share of female workers and the share of female managers.

METHODOLOGY – ÑOPO DECOMPOSITION

- It is a non-parametric method based on matching that assigns each female a male ‚twin' in terms of their observable characteristics
- Once matched, it compares average wages among matched (in the ‚common support') and unmatched (out of the ‚common support') male and female subsamples

- We take an advantage of the linked employer-employee data and apply Ñopo decomposition for each firm (*j*) in our sample:

$$\Delta_j = \Delta O_j + \Delta X_j + \Delta M_j + \Delta F_j$$

Δ_j - the total gap (raw difference)

ΔO_j - **the unexplained (‚discriminatory') component of the gap**

ΔX_j - the explained part of the gap (among matched cases)

ΔM_j - the part explained by the differences in characteristics between matched and unmatched females

ΔF_j - the part explained by the differences in characteristics between matched and unmatched males

RESULTS

Means for selected variables; sample of firms with at least 100 workers

	All	Public	Private
Structure of employment (averaged by firms)			
Share of females	0.47	**0.58**	**0.38**
Share of female managers	0.42	**0.53**	**0.34**
Share of workers aged 25-29	0.13	0.08	0.16
Share of workers aged 55 +	0.14	0.18	0.12
Share of workers with tertiary education	0.37	0.49	0.29
Share of workers on a part-time schedule	0.04	0.04	0.03
Share of workers on a temporary contract	0.14	0.09	0.17

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Ñopo decomposition of the gender wage gap within firm by sector

Level	Raw Difference (Δ)	Unexplained (adjusted pay gap; ΔO)	Explained (ΔX)
GWG within firm			
Overall	-0.1522	-0.1449	-0.0166
Private	**-0.1576**	**-0.1576**	-0.0140
Public	**-0.1449**	**-0.1283**	-0.0199

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Is women's overrepresentation in the public sector, especially in managerial positions, the reason for the relatively smaller unexplained wage inequality???

RESULTS

Coefficients on the shares of women and female managers obtained from OLS estimation of gender pay gaps at firm level

Firm level share of:	Model 1		Model 2	
	Private	Public	Private	Public
Women	0.128***	-0.061*	0.135***	-0.059
	(0.047)	(0.036)	(0.045)	(0.037)
Female managers	-0.013	0.038*	-0.017	0.039*
	(0.039)	(0.022)	(0.039)	(0.021)
Controls:				
NACE	Yes		Yes	
Regions	Yes		Yes	
Firm size	Yes		Yes	
Co-worker characteristics	No		Yes	

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;

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Higher shares of women are likely to **decrease** GWG only in the private sector

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Higher shares of female managers are likely **to decrease** GWG in the public sector

RESULTS

Coefficients on the shares of women and female managers from quantile regression estimates of gender pay gaps at firm level

Firm level share of:	private sector				
	10th p	25th p	50th p	75th p	90th p
women	0.241***	0.140***	0.096***	0.057**	-0.003
	(0.056)	(0.035)	(0.025)	(0.025)	(0.040)
female managers	-0.075	-0.029	-0.053**	-0.004	0.099**
	(0.053)	(0.026)	(0.021)	(0.018)	(0.043)
Controls:	NACE, firm size, region, co- worker characteristics.				
Firm level share of:	public sector				
	10th p	25th p	50th p	75th p	90th p
women	-0.165***	-0.107**	-0.049	0.008	0.013
	(0.053)	(0.045)	(0.047)	(0.037)	(0.055)
female managers	0.010	-0.001	0.019	0.016	0.099***
	(0.027)	(0.023)	(0.028)	(0.025)	(0.029)
Controls:	Collective bargaining, NACE, firm size, region, co- workers characteristics.				

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In the private sector, higher shares of women are likely to **decrease** the GWG in the firms, which have high and medium GWGs.

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Both in the private and in the public sector, higher shares of female managers are likely to **decrease the GWG in the firms, in which the GWG is already low (even positive)**

RESULTS

Coefficients on the shares of women and female managers obtained from OLS estimation of gender pay gaps at firm level, separately for low, medium and high human capital firms

Firm level share of:	private sector			public sector		
	low skilled	medium skilled	high skilled	low skilled	medium skilled	high skilled
Women	0.148	0.172***	0.106	0.029	0.055	-0.036
	(0.092)	(0.066)	(0.101)	(0.073)	(0.075)	(0.066)
Female managers	-0.016	-0.012	-0.020	0.002	0.005	0.094***
	(0.066)	(0.057)	(0.071)	(0.043)	(0.049)	(0.029)
Controls:	Collective bargaining, NACE, firm size, region, co- workers characteristics.					

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;

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Controls:	Collective bargaining, NACE, firm size, region, co- workers characteristics.					

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In the private sector, higher shares of women are likely to **decrease** the GWG, especially in medium skilled firms

In the public sector, higher shares of female managers are likely to **decrease** the GWG, only in high skilled firms.

RESULTS

What are **the high-skilled/low pay gap public institutions** for which there is a significant link between female managers and gender pay gap?

- Mostly operating in public administration, education, transport and storage sectors
- Small in size and having high shares of both workers and managers who are female.
- The workers in these organizations tend to have shorter tenures, which suggests that these organizations were either founded more recently than other public entities, and/or that they have been experiencing a high degree of employee turnover.

Robustness checks

- Quality of matching:
  - only firms with ≥30% matched cases
  - firms with ≥ 80 employees
- Gender pay gaps among non-managerial workers
- Alternative measures of skill content (firm-level average wages)

Results OLS

Results quantile reg.

Results skill content

The strongest results (in line with the previous findings) :

- In public sector units with a small or a positive gender gap, having a higher share of managers who are female is associated with an even smaller female wage disadvantage.
- Female managers decrease the size of the gender wage inequality in public institutions in which the average wages (skill content) are higher than in other public units.

CONCLUSION

- In this paper we analyze the link between the presence of female managers and the firm-level gender pay gap by investigating differences between the public and the private sectors.
- We hypothesize that women's overrepresentation in the public sector relative to the private sector, especially at the managerial level, is the reason for the country's relatively small unexplained gender wage gap.

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- We hypothesize that women's overrepresentation in the public sector relative to the private sector, especially at the managerial level, is the reason for the country's relatively small unexplained gender wage gap.

- **The findings do not support this hypothesis.**
- They show, however, that **there are certain public institutions , for which this link is likely to hold.**

CONCLUSION

- Most of these organizations:
  - have a highly skilled workforce,
  - with relatively short tenure,
  - have a relatively small pay gap,
  - offer above-average wages,
  - and operate in the public administration, transport, or educational sector.

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  - have a highly skilled workforce,
  - with relatively short tenure,
  - have a relatively small pay gap,
  - offer above-average wages,
  - and operate in the public administration, transport, or educational sector.
- These workplaces thus appear to be more “modern;” i.e., they have a younger, better educated, and more flexible workforce.
- This may suggest that at these organizations the pay policies are more transparent and more gender-equal, and the pay gaps are consequently smaller.
- Alternatively, these institutions – because they have better educated workers and display low wage inequality – may have greater ability to attract and maintain more women in higher level positions.

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Thank you!

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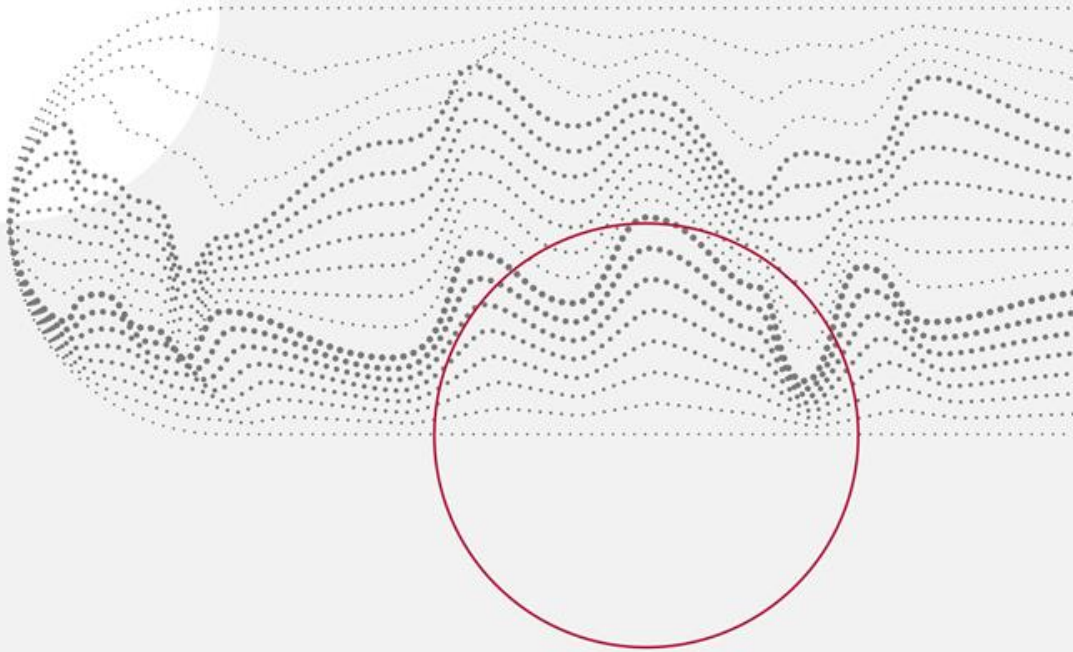

METHODOLOGY – ÑOPO DECOMPOSITION

- While matching we need to choose characteristics based on which individuals are matched
- There is a trade-off between the number of matching variables and the number of matched cases (i.e. ‚the curse of dimensionality'; Ansal, 2015).
- We try 7 specifications and choose to match male and female workers based on:
  - Age (5 groups), education (5 groups), occupations (5 groups)

Combination (dummies for)	Matched men	Matched females	Average wage difference	Average adjusted wage gap
(1) age + education	86%	78%	-15.2%	-17.9%
(2) age+ education+ experience	77%	69%	-15.2%	-18.4%
(3) age + education + experience + tenure	65%	58%	-15.2%	-18.8%
(4) age + education + experience + tenure + occupations	47%	42%	-15.2%	-15.1%
(5) age + education + experience + tenure + occupations +contract type	44%	40%	-15.2%	-15.0%
(6) age + education + experience + tenure + occupations +contract type + part time	43%	38%	-15.2%	-15.1%
(7) age + education + occupations	**67%**	**59%**	-15.2%	-14.5%

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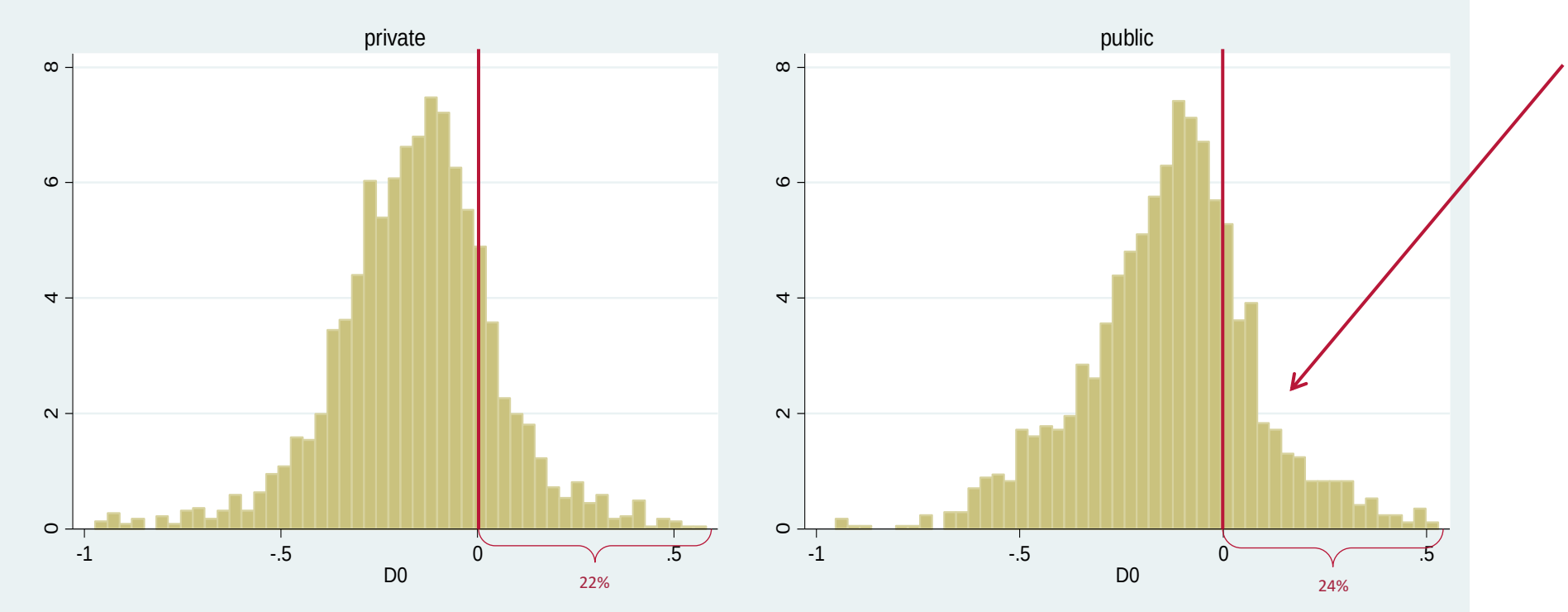
RESULTS

Distribution of firm-specific adjusted wage gap by sector



Smaller GWG in the public sector is partially due to the fact that public units are more likely to reveal positive wage gaps, meaning that women earn more than ‚similar' men.

ROBUSTNESS ANALYSIS

Coefficients on the shares of women and female managers obtained from OLS estimation of gender pay gaps at firm level using different specifications

Firm-level share of:	Model 1		Model 2	
	Private	Public	Private	Public
Panel A: Firms with at least 80 workers				
Women	**0.153*****	-0.022	**0.155*****	-0.021
	(0.044)	(0.033)	(0.043)	(0.034)
Female managers	-0.024	**0.040****	-0.027	**0.032***
	(0.035)	(0.020)	(0.035)	(0.019)
Panel B: Firms with at least 30% matched cases				
Women	**0.052****	-0.066*	**0.055****	-0.058
	(0.026)	(0.038)	(0.026)	(0.039)
Female managers	-0.011	0.016	-0.014	0.016
	(0.021)	(0.023)	(0.021)	(0.022)
Panel C: Non-managerial workers				
Women	**0.138*****	0.155***	**0.155*****	-0.038
	(0.035)	(0.039)	(0.039)	(0.037)
Female managers	-0.012	-0.018	-0.018	**0.042***
	(0.035)	(0.035)	(0.035)	(0.023)

Model 1 controls for: collective bargaining, NACE, firm size, region. Model 2 additionally controls for co- workers characteristics.

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ROBUSTNESS ANALYSIS

Coefficients on the shares of women and female managers obtained from quantile regressions of gender pay gaps at firm level using different specifications

Panel A: Firms with at least 80 workers					
	private sector				
Firm-level share of:	10th p	25th p	50th p	75th p	90th p
women	0.265***	0.156***	0.091***	0.061**	0.009
	(0.055)	(0.034)	(0.023)	(0.026)	(0.040)
female managers	-0.080*	-0.031	-0.044**	-0.007	**0.097****
	(0.044)	(0.024)	(0.019)	(0.018)	(0.039)
Firm-level share of:	public sector				
	10th p	25th p	50th p	75th p	90th p
women	-0.180***	-0.081**	-0.032	0.028	0.027
	(0.048)	(0.040)	(0.039)	(0.032)	(0.048)
female managers	0.003	0.002	0.005	0.024	**0.101*****
	(0.026)	(0.019)	(0.022)	(0.021)	(0.024)

Controls: collective bargaining, NACE, firm size, region, co- workers characteristics.

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ROBUSTNESS ANALYSIS

Coefficients on the shares of women and female managers obtained from quantile regressions of gender pay gaps at firm level using different specifications

Panel B: Firms with at least 30% matched cases					
	private sector				
Firm-level share of:	10^{th} p	25^{th} p	50^{th} p	75^{th} p	90^{th} p
women	0.042	0.031	0.046	0.051*	0.031
	(0.053)	(0.038)	(0.030)	(0.030)	(0.038)
female managers	-0.035	0.006	-0.026	0.015	0.033
	(0.038)	(0.028)	(0.025)	(0.023)	(0.032)
Firm-level share of:	public sector				
	10^{th} p	25^{th} p	50^{th} p	75^{th} p	90^{th} p
women	-0.160***	-0.071	-0.059	-0.002	-0.045
	(0.059)	(0.051)	(0.046)	(0.045)	(0.062)
female managers	-0.012	-0.016	0.004	-0.000	**0.074****
	(0.035)	(0.026)	(0.029)	(0.025)	(0.029)

Controls: collective bargaining, NACE, firm size, region, co- workers characteristics.

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ROBUSTNESS ANALYSIS

Coefficients on the shares of women and female managers obtained from quantile regressions of gender pay gaps at firm level using different specifications

Panel C: Non managerial workers					
	private sector				
Firm-level share of:	10th p	25th p	50th p	75th p	90th p
women	0.232***	0.163***	0.097***	0.068***	0.003
	(0.050)	(0.028)	(0.026)	(0.025)	(0.041)
female managers	-0.000	-0.008	-0.024	0.007	**0.059***
	(0.041)	(0.025)	(0.023)	(0.020)	(0.032)
Firm-level share of:	public sector				
	10th p	25th p	50th p	75th p	90th p
women	-0.156**	-0.079*	0.006	0.039	0.030
	(0.067)	(0.046)	(0.045)	(0.040)	(0.044)
female managers	0.020	0.006	0.024	0.020	**0.093*****
	(0.033)	(0.023)	(0.026)	(0.026)	(0.026)

Controls: collective bargaining, NACE, firm size, region, co- workers characteristics.

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ROBUSTNESS ANALYSIS

Coefficients on the shares of women and female managers obtained from OLS estimation of gender pay gaps at the firm level, along the wage distribution (for separate wage quantiles)

Firm level share of:	quantile 1	quantile 2	quantile 3	quantile 4	quantile 5
Private sector					
Women	-0.082	0.207	0.158**	0.233***	0.186**
	(0.064)	(0.172)	(0.062)	(0.074)	(0.088)
Female managers	0.029	-0.183	-0.012	0.015	0.086
	(0.047)	(0.127)	(0.061)	(0.062)	(0.083)
Public sector					
Women	-0.021	-0.166*	-0.061	-0.200***	0.086
	(0.078)	(0.093)	(0.116)	(0.073)	(0.092)
Female managers	0.028	0.041	-0.044	-0.013	**0.076***
	(0.046)	(0.055)	(0.051)	(0.048)	(0.045)

Controls: collective bargaining, NACE, firm size, region, co- workers characteristics.

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